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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,731	12/08/2003	Pei-Chung Wang	GP-303542	3953

7590 06/14/2005

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EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,731

Applicant(s)

WANG ET AL.

Examiner

M. Alexandra Elve

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/8/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Banas et al. (USPN 4,000,392).

Banas et al. discloses a method of achieving a controlled laser weld. Suitable welds are formed in titanium, stainless steel, mild steel and aluminum. Different types of weld zones may be formed depending on the weld depth, laser power, welding speed and the trailer shield. The trailer shield ensures a fusion zone, which is purified of inclusions and undesirable gases, hence the minimization of porosity. Solidification rate must be slow enough such that the impurities are allowed to escape before final solidification. (abstract, figures, col. 3, lines 54-68, col. 4, lines 1-25, col. 7, lines 20-25, col. 8, lines 39-62, col. 9, lines 57-65, col. 10, lines 1-20)

Claims 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hillman et al. (USPN 5,142,119).

Hillman et al. discloses a continuous laser beam welding process in which steel sheet members are joined and welded in a manner to reduce porosity. Members are

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arranged in intimate contact and the outer surface of the upper member is exposed to laser irradiation, thus heating, melting and creating a pool of molten metal within both members and upon solidification fuse and bond the two sheet member together. A strong substantially pore free track is formed. The intensity of the beam and the rate at which the beam is advanced are adjusted so that the beam heats the surface sufficiently to produce a weld nugget that extends from the top through the member and two-thirds (approx. 66%) of the depth into the second member. (abstract, figures, col. 1, lines 25-30, col. 2, lines 11-23, col. 3, lines 40-65, col. 4, lines 1-2)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banas et al. as stated in the paragraph above and further in view of Austin et al. (USPN Re. 36,926).

Banas et al. does not teach temperature distribution, and the weld pool of the workpiece area.

Austin et al. discloses a welding system in which the weld pool is examined for width, length and current application. Size of the weld area is a function of the temperature of the weld area and hence the current input. If a weld pool is too small then the current is increased. Thus the weld pool can be optimized with respect to weld size and temperature. (abstract, figures, col. 1, lines 29-55, col. 3, lines 30-50)

It would have been obvious to one of ordinary skill in the art at the time of the invention to determine and control the temperature distribution and size of the weld pool as taught by Austin et al. in the Banas et al. system because this results in less defects (e.g. porosity) in the weld region.

Claims 6-11 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hillman et al. as stated in the paragraph above and further in view of Banas et al.

Hillman et al. does not teach the use of aluminum or the modification and control of weld pool solidification.

Banas et al. discloses a method of achieving a controlled laser weld. Suitable welds are formed in titanium, stainless steel, mild steel and aluminum. Different types of weld zones may be formed depending on the weld depth, laser power, welding speed and the trailer shield. The trailer shield ensures a fusion zone, which is purified of inclusions and undesirable gases, hence the minimization of porosity. Solidification rate must be slow enough such that the impurities are allowed to escape before final

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solidification. (abstract, figures, col. 3, lines 54-68, col. 4, lines 1-25, col. 7, lines 20-25, col. 8, lines 39-62, col. 9, lines 57-65, col. 10, lines 1-20)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use aluminum and a trailer shield as taught by Banas et al. in the Hillman et al. system because the aluminum is merely a material selection and the trailer shield yields a superior weld region that is less defects (e.g. porosity).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 11, 2005.

A handwritten signature in black ink, appearing to read 'MA Elve', with a long horizontal flourish extending to the right.

M. Alexandra Elve
Primary Examiner 1725